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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/810,278 | 03/16/2001 | Sumio Kawano | KNI-148-A | 7912 |

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EXAMINER

MORAN, TIMOTHY J

ART UNIT PAPER NUMBER

2878

DATE MAILED: 11/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/810,278

Applicant(s)

KAWANO ET AL.

Examiner

Timothy J. Moran

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 18-19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "short wavelength range is 1-2 cm" is not taught in the original specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 and 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwamoto, U. S. Patent No. 5,324,945 in view of Maggard, U. S. Patent No. 5,145,785. Regarding claim 1, Iwamoto describes (fig. 1, col. 2, line 62-col. 3, line 22) a method for analyzing a sample using near infrared spectroscopy comprising the steps of applying near infrared light to the sample (from source 4), detecting diffusely transmitted light by an optical sensor (3) to measure an absorption spectrum (col. 6, lines 27-46), and modifying the measured spectrum using a calibration equation (col. 5, line 34- col.

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6, line 3) which has been determined in advance (col. 4, lines 16-45) using the steps of applying light and measuring a spectrum for samples with known characteristics, thereby determining an object characteristic of the sample (the sugar content). Iwamoto does not teach the use of such a method for analyzing a liquid sample. However, the analysis of liquids is well known in the art of spectroscopy. For example, Maggard (col. 2, lines 35-46) teaches the analysis of liquids using near infrared spectroscopy.

Therefore it would have been obvious to one of ordinary skill in the art to analyze liquids using the method of Iwamoto to determine physical properties of the liquid. Iwamoto does not teach the use of a test tube as the sample cell, but since such test tubes are well known in the art of liquid analysis, the use of such tubes would have been obvious to one of ordinary skill in the art for the purpose of containing the liquid sample. Iwamoto does not teach the use of test tubes with the same specifications during measurements of the samples with known characteristics. However, since such control of experimental materials is well known in the art of chemical analysis, it would have been obvious to one of ordinary skill in the art to provide for test tubes with the same characteristics with the modified apparatus of Iwamoto for the advantage of predictable results.

Regarding claim 2, Iwamoto teaches (col. 5, lines 34-35) the use of wavelengths in the range including (786 nm to 914 nm) which overlaps the region (700 nm to 1100 nm).

Regarding claim 3, Maggard teaches the analysis of oil (col. 2, lines 35-40) using near infrared spectroscopy. Therefore it would have been obvious to one of ordinary

skill in the art to analyze oil using the modified method of Iwamoto to determine physical properties of oil.

Regarding claims 4 and 14, Iwamoto does not explicitly teach the use of test tubes as sample cells, but their use is well known in the art of analysis. Therefore it would have been obvious to one of ordinary skill in the art to use test tubes to act as sample cells. Iwamoto also does not teach the use of test tubes with the same specifications during measurements of the samples with known characteristics. However, since such control of experimental materials is well known in the art of chemical analysis, it would have been obvious to one of ordinary skill in the art to provide for test tubes with the same characteristics with the modified apparatus of Iwamoto for the advantage of predictable results.

Regarding claim 5, Iwamoto describes an analytical apparatus (fig. 1) for analyzing a sample comprising a sample position (location of fruit (2)), a block provided with a housing portion for the sample position (1), a near infrared apparatus provided with a spectroscope (3) for producing near infrared light in the near infrared wavelength range and an optical sensor (3) for detecting the near infrared light, light conduction means (7) for conducting the produced near infrared light to the sample cell, and control means for outputting a measurement command to the apparatus and for modifying the measured spectrum using a calibration equation (col. 5, line 34- col. 6, line 3) which has been determined in advance (col. 4, lines 16-45), for thereby computing an object characteristic (the sugar content). Iwamoto does not teach the use of such an apparatus with a sample cell to analyze a liquid sample. However, as discussed above, such

features would have been obvious to one of ordinary skill in the art. Iwamoto also does not teach the use of light conduction means for conducting at least one of diffusely reflected light or diffusely transmitted light from the sample to the optical sensor. However, the use of light conductors is well known in the art of spectroscopy. In fact, a light conductor is taught as being useful in the light source section of the Iwamoto for the benefit of allowing separation of the light source from the sample region. Therefore the use of a light conductor to conduct diffusely reflected or diffusely transmitted light in the modified apparatus of Iwamoto would have been obvious to one of ordinary skill in the art for the advantage of separation of the optical sensor from the sample region.

Regarding claim 7, Iwamoto teaches the use of a monochromatic or similar light source (col. 2, lines 22-25) and the use of a silicon detector (col. 2, lines 65-67).

Regarding claim 8, Iwamoto teaches that the light conduction means comprises an optical fiber (col. 3, lines 11-13), where the "bundle of glass fibers" is understood to comprise a single optical fiber, in addition to other optical fibers.

Regarding claim 9, Iwamoto teaches that the block (1) is provided with a temperature control means for stabilizing the sample temperature (col. 2, lines 65-67).

Regarding claim 10, Iwamoto does not teach the use of a test tube as the sample cell, but since such test tubes are well known in the art of liquid analysis, the use of such tubes would have been obvious to one of ordinary skill in the art for the purpose of containing the liquid sample.

Regarding claim 11, Iwamoto teaches the determination of the calibration equation in advance using samples with known characteristics (col. 4, lines 16-68).

Regarding claim 12, Iwamoto does not teach the use of test tubes with the same specifications during measurements of the samples with known characteristics. However, since such control of experimental materials is well known in the art of chemical analysis, it would have been obvious to one of ordinary skill in the art to provide for test tubes with the same characteristics with the modified apparatus of Iwamoto for the advantage of predictable results.

Regarding claim 13, Iwamoto teaches the use of a bundle of optical fibers as the light conducting means (col. 3, lines 11-13).

Regarding claims 15-17, all limitations are discussed above.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwamoto and Maggard as applied to claim 5 above, and further in view of Anderson, U. S. Patent No. 5,502,560. Iwamoto does not teach the use of a white light source and a diode array. However, Anderson teaches the use of a white light source (203, col. 5, lines 9-11) and a diode array (209, col. 5, lines 14-18) in an infrared spectrometer (col. 8, lines 3-8). Therefore it would have been obvious to one of ordinary skill in the art to provide for a white light source and a diode array sensor in the modified device of Iwamoto to generate and detect radiation.

Response to Arguments

Applicant's arguments filed September 30, 2002 have been fully considered but they are not persuasive.

In response to applicant's argument (page 3, third paragraph and elsewhere) that the examiner's conclusion of obviousness is based upon improper hindsight reasoning,

it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In the present case, Maggard teaches the motivation for proper analysis of fluids using infrared radiation. This teaching, combined with the teaching of Iwamoto that a calibration equation and reference samples can be used in accurate infrared radiation analysis, would have led one of ordinary skill in the art to combine the features to arrive at the claimed invention.

In response to applicant's argument (page 3, last paragraph and page 4, first two paragraphs and page 6, second paragraph) that Maggard is nonanalogous art relative to Iwamoto, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, it is recognized that the wavelength ranges used in the two references are not identical. However, the methods and objectives of the two references are considered to be very similar and are likely to be understood by one of ordinary skill in the art of infrared analysis.

In response to applicant's argument (page 4, last paragraph, page 5, and page 6, first and third paragraphs) that the references do not teach the determination of a

plurality of sample characteristics or the use of test tubes, it is considered well known in the art of spectroscopy to use such methods.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kester, U. S. Patent No. 6,339,222 teaches (see abstract) the use of infrared spectroscopy to determine a plurality of characteristics of a sample, where the characteristics are concentrations of various ions.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Moran whose telephone number is 703-305-0849. The examiner can normally be reached on M-F 8:30-5:00.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 703-308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

T.M.

TM
November 8, 2002



DAVID PORTA
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TECHNOLOGY CENTER 2800